The claims defining the invention are as follows:

1. An apparatus for separating a multiphase mixture, separable into discrete density phases, including:

a circular bowl rotatable about a central axis and having an opening through which the mixture is introduced into the bowl, whereby the rotation of the bowl separates the mixture to form annular rings of the discrete density phases, and

a collection assembly for removing the separated discrete density phases,

wherein the collection assembly is movable with respect to the bowl such that the collection assembly can be positioned in the bowl to sequentially selectively and individually remove the annular columns from the bowl while the bowl is rotating substantially without disturbing the remaining annular columns within the bowl.

2. An apparatus according to claim 1, wherein the collection assembly is positioned proximal to a surface of the annular column closest to the central axis during removal of the annular column.

3. An apparatus according to claim 1 or 2, wherein the collection assembly has a collection conduit for collecting at least one annular column inserted into the bowl through the opening and a pump.

4. An apparatus according to claim 3, wherein the flow rate of collection of the annular column from the surface of the annular column is at least the flow rate at which an equivalent volume within the annular column is presented for collection.

5. An apparatus according to claim 4, wherein the collection conduit is arranged such that the end of the collection conduit extends substantially perpendicular to the central axis of the bowl.

6. An apparatus according to any one of claims 1 to 5, wherein the mixture is introduced into the bowl by means of a delivery conduit inserted into the bowl through the opening of the bowl.

7. An apparatus according to any one claims 1 to 6, wherein a cleaning conduit is inserted into the bowl through the opening to introduce a cleaning solution to the bowl after the separated multiphase mixture is removed from the bowl.

8. An apparatus according to any one of claims 1 to 7, wherein the introduction of the multiphase mixture into the bowl is by introducing the separate components of the mixture separately into the bowl, and the bowl includes means for agitating and mixing the separate components in the bowl to form the mixture.

9. An apparatus according to claim 8, wherein the means for agitating and mixing the mixture is baffles positioned in the container.

10. An apparatus according to claim 3, 4 or 5, wherein the collecting assembly further includes a waste collecting conduit and a means for identifying the discrete density media or boundary layers formed thereby, and a means to control the movement of the collection assembly such that the movement of the removal means is controllable to allow for the sequential removal from the bowl of each discrete density media by either the collecting conduit or waste collecting conduit.

11. An apparatus according to claim 10, wherein the means for identifying the discrete density media is selected from optical, spectral, electrical conductivity or rheostatic analysis of the discrete density media.

12. An apparatus according to any one of claims 1 to 11, wherein the mixture is selected to partition nuclei of cellular material within the mixture at a boundary layer of the discrete density phases formable thereby.

13. An apparatus according to any one of claims 1 to 11, wherein the mixture is selected to partition nucleic acids of cellular material within the mixture in a discrete density phase formable thereby.

14. An apparatus according to any one of claims 1 to 11, wherein the mixture is selected to partition nucleic acids of cellular material within the mixture that are bound to a particle at a boundary layer of the discrete density phases formable thereby.

15. A method of separating a multiphase mixture separable into discrete density phases, including the steps of:

introducing the mixture into a circular bowl, the bowl having an opening and a central axis of rotation,

rotating the bowl about the central axis of the bowl such that the mixture is separated into annular columns formed by the discrete density phases, and

removing the discrete density phases from the bowl by a collection assembly

wherein the collection assembly is movable with respect to the bowl such that the collection assembly can be positioned in the bowl to sequentially selectively and individually remove the annular columns from the bowl while the bowl is rotating substantially without disturbing the remaining annular columns within the bowl.

16. A method according to claim 15, wherein the collection assembly is positioned proximal to a surface of the annular column closest to the central axis during removal of the annular column.

17. A method according to claim 15 or 16, wherein the collection assembly includes a collection conduit for collecting at least one annular column.

18. An apparatus according to any one of claims 15 to 17, wherein the flow rate of collection of the annular column from the surface of the annular column is at least the flow rate at which an equivalent volume within the annular column is presented for collection.

19. A method according to any one of claims 15 to 18, wherein the introduction of the multiphase mixture into the container is by a delivery conduit inserted into the bowl through the opening of the bowl.

20. A method according to any one of claims 15 to 19, wherein the method further includes the step of cleaning the bowl after removal of the discrete density phases from the bowl to clean the bowl.

21. A method according to any one claims 15 to 20, wherein the steps of introducing a multiphase mixture, rotating the bowl and removing the discrete density media are repeated for at least one other multiphase mixture whilst the bowl is rotating.

22. A method according to any one of claims 15 to 21, wherein the step of introducing the multiphase mixture into the bowl is achieved by introducing the separate components of the mixture separately into the bowl and agitating and mixing the separate components in the bowl to form the multiphase mixture.

23. A method according to claim 22, wherein the agitating and mixing of the multiphase mixture is achieved by baffles in the bowl.

24. A method according to any one of claims 15 to 23, wherein the method further includes the step of identifying the discrete density phases or boundary layers formed thereby, and controlling the movement of the removal means such that each discrete density phases is removed from the bowl by either a collection conduit or a waste collection conduit.

25. A method according to claim 24, wherein the means of detection is selected from optical, spectral, electrical conductivity or rheostatic analysis of the discrete density phases in the bowl.

26. Separating a multiphase mixture selected to partition nuclei of cellular material within the mixture at a boundary layer of the discrete density phases formable thereby using a method according to any one of claims 15 to 25. .

27. Separating a multiphase mixture selected to partition nucleic acids of cellular material within the mixture in a discrete density phase formable thereby using a method according to any one of claims 15 to 25.

28. Separating a multiphase mixture selected to partition nucleic acids of cellular material within a multiphase mixture that are bound to a particle at a boundary layer of the discrete density phases formable thereby using a method according to any one of claims 15 to 25.